ONTARIO PEST MANAGEMENT

RESEARCH & SERVICES COMMITTEE

2000 ANNUAL REPORT

TO

ONTARIO AGRICULTURAL SERVICES

COORDINATING COMMITTEE

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EXECUTIVE SUMMARY

The Ontario Pest Management Research & Services Committee (OPMRSC) met on January 5th to consider cross commodity pest management issues. Issues identified by the technical working groups were considered along with those forwarded from the Ontario Horticultural Crops Research and Services Committee and the Ontario Field Crops Research and Services Committee.

The OPMRSC also organized the Ontario Crop Protection Meetings, held Nov. 8th , 2000, in conjunction with the Ontario Branch of the Crop Protection Institute. There were 12 oral presentations and 20 poster presentations, representing projects funded through the Food Systems 2002 Research Program, and the OMAFRA Special Research Fund.

Crop protection issues affect both the horticulture and field crop industries, but it is not surprising that the approaches to solving the problems differ, considering the different production practices and value per acre of the commodities. Many of the field crop issues focus on the need for plant breeding and selection for pest resistance, while the issues affecting the production of horticultural crops revolve around access to crop protection materials, including biological controls.

Seven recommendations were formulated; two directly address the issue of access to pesticides through harmonization and Minor Use registrations including the problems resulting from the introduction of the requirement for Good Laboratory Practices for Minor Use residue trials. This requirement increases the cost of each trial and currently limits the number of research facilities that can carry out these trials.

Two recommendations address the need for continued research on crop protection issues, including restoring the funding available for this research and maintaining the research teams needed to address the interrelated crop protection problems. Other issues are a request that Lab Services Division introduce PCR diagnostic technology and that OMAFRA maintain the support for Integrated Pest Management Programs in the province, including program development, training and research.

Two motions were also passed at the meetings, dealing with administrative issues and policy. The first addressed the upcoming ARIO review. The committee supported a motion that pest management issues should be presented and reviewed separately, rather than incorporated into the field crops and horticultural crops reviews. The second motion dealt with the review of grant proposals submitted to the Pesticide Reduction and Safe Usage portion of the OMAFRA Special Research Fund. The committee supported the motion that the entire OPMRSC review these proposals, and that standard measures to avoid conflict of interest be followed, that is, any committee member who is named on a proposal leave the room during discussion of the proposal.

MANDATE

The mandate of the OPMRSC is to review and consider pest management and crop protection issues that may affect several different commodities within Ontario plant agriculture. The committee then identifies issues and formulates recommendations to address deficiencies and needs within the system. A second activity is the co-ordination of the Ontario Crop Protection Meetings , where industry representatives and researchers can share information on crop protection issues.

The committee also accepts the reports of the Technical Working Groups that review and update the OMAFRA crop production publications. These are:

- The Ontario Weed Committee
- Technical Working Groups which formerly reported to the Ontario Crop Protection Committee:
  - Field Crops,
  - Fruit,
  - Greenhouse Vegetables
  - Greenhouse Floriculture,
  - Nursery
  - Ornamentals and Turf;
  - Tobacco and Ginseng
  - Vegetables.

COMMITTEE ACTIVITIES

The OPMRSC met twice in 2000 to review research proposals submitted to the OMAFRA Food Systems 2002 Program.

The committee also re-established and organized the Ontario Crop Protection Meetings. These meetings used to be a joint effort of the Ontario Crop Protection Committee (OCPC) and the Ontario Branch of the Crop Protection Institute (CPI). Now the OPMRSC and CPI will co-operate to continue this important annual conference.

The 2000 Ontario Crop Protection Meeting was held on Wed., Nov. 8, 2000, at the Italian Canadian Club in Guelph. There were 12 oral presentations, including key-note addresses by Proffessors. Gerry Stephenson and Neil Miles. Over 20 poster presentations highlighted the research funded by OMAFRA's FS2002 program.

The annual meeting of the OPMRSC was held in Arkell on Jan. 5. The committee accepted the reports of the Ontario Weed Committee and reports of the following Technical Working Groups: Fruit, Ginseng, Nursery, Ornamentals and Turf, Protected Crops, and Vegetables. The committee also reviewed the research priorities and recommendations forwarded to the OPMRSC from the Ontario Field Crops and the Ontario Horticultural Crops Research and Services Committees.

Initial plans were set in place for strategic planning to prepare for the upcoming four year Strategic Report in conjunction with the ARIO Review in 2002.

In addition, the following two motions passed:

1. Moved and Carried: The ARIO Review of Pest Management Programs should be carried out as a separate review (as in the past) rather than having pest management and crop protection research reviewed in combination with the Horticultural Crops and Field Crops Programs.

2. Moved and Carried: The OPMRSC, as a whole, remain the review body for proposals related to pest management and crop protection, because the expertise is with this committee.

The Chair of OPMRSC was directed to enquire of the University of Guelph/OMAFRA Plant Research Program about the re-allocation of funds when a specific research position is temporarily vacant. The question was raised as to whether these funds are available for re-allocation. If so, how is this accomplished, if not, what happens to these funds.

ISSUES

Increasing costs of Minor Use registration process and decreased funding from AAFC for Minor Use trials:
The requirement for all residue trials for Minor Use registrations to be carried out under GLP (Good Laboratory Practices) has increased the costs of doing these trials. At the same time, AAFC has reduced the proportion of funding (50%, down from 75%) for these trials, further increasing the burden on grower associations and reducing the number of applications. This has the overall effect of reducing access of growers to the crop protection materials used by their competitors in the Untied States and elsewhere.

Availability of non-biased crop information and pest management programs throughout the province, including field diagnosis of crop problems:
In order to remain competitive, Ontario growers need the unbiased expertise of extension personnel. Two-way communication with growers and others in the industry is essential, including agriphones, newsletters, the internet, presentations, farm calls and individual contacts.

Consolidation of the crop protection industry:
Company mergers are still occurring (e.g. Aventis, BASF, and Syngenta). This will probably have an effect on the number of people employed in the industry. A possible impact on the number of crop protection materials being offered is also possible, and this may reduce the number of minor uses on labels.

Maintaining research teams and succession planning for research programs:
There is an important synergy that results from having a research team in a single location. As a significant proportion of the research community prepares for retirement, plans to maintain research programs and effective teams should be developed by research managers in consultation with the industry.

The upcoming Supreme Court judgement on pesticide use ban by municipalities will be closely watched:
Depending on the outcome, there may be an impact on the agricultural community.

Ongoing Issues

The need for improved accessibility of Ontario growers to crop protection materials, including IPM friendly materials and biological and biorational products, was identified by virtually every commodity group. This includes harmonization of access with growers of similar crops in the United States, not just the harmonization of the review process.

RECOMMENDATIONS ARISING FROM GAPS/BARRIERS

OPMRSC RECOMMENDATION #1.

Target Agencies:
Pest Management Regulatory Agency, Policy Branch
Agriculture and Agri-Food Canada

Title: Improve the Registration Process for Crop Protection Materials, including Biologicals and Biorationals, and Increase Harmonization of the Availability of Crop Protection Materials Between Canada and the United States

Details:
The American Food Quality Protection Act has, and will continue to result in the loss of many older pesticides in both Canada and the United States. Because growers still need crop protection materials to replace those that are lost, and because there is no true 'harmonization' in availability of currently registered products in the US and Canada, the Canadian system must move to "catch up", such that Ontario growers have access to the crop protection materials registered for use in the United States.

Ontario growers remain at a competitive disadvantage in the world market as a result of limited access to crop protection materials, including new chemistry, biological controls and biorational, or least toxic products. Ontario growers often must use older, less environmentally friendly products, because new materials are not registered. The implementation of the Food Quality Protection Act in the United States will mean that some of the older materials will no longer be available, or that produce treated with these products cannot be exported to the U.S. While American growers have access to new products and new chemistry to replace those materials that are lost, Ontario growers often do not have access to these, or must wait years before these products are registered. In some cases, the costs of a Canadian registration are such that it is not economically feasible.

While improvements have been made to the system of registering pesticides, for instance, the URMULE system is gradually becoming faster, and joint registrations are proceeding, significant barriers still exist.

To work within the existing system, adequate funding is needed to assist minor crops producers and researchers who must conduct trials to GLP standards . This is required in time for the 2001 growing season. Funding must cover the real project costs. The change in the funding formula used by AAFC for Minor Use registrations, that is reducing their contribution from 75% to 50%, places an undue hardship on growers and the industry, and will slow the registration process even more, because of a lack of funding.

Background:

i) Availability of Crop Protection Materials :

Changes are needed to the current registration system to move closer to harmonization of access to crop protection materials with the United States, including increasing the number of products that are jointly registered. Currently, there is a different understanding of the term "harmonization" between growers and the PMRA. Growers want harmonized access to materials, while PMRA seems to interpret the term to mean only increased harmonization of the review process. This means that growers still have reduced access to important crop protection materials.

A system of Special Exemption for least toxic products (similar to that of the EPA) would increase the availability of IPM compatible materials, and the system for the registration of biological controls must undergo significant changes to make these materials available to growers. Currently, at least one product (Dially disulfide for the management of whit rot on onions; a biorational product in the EPA system) was not submitted for joint registration because of concerns that the Canadian registration system would slow the U.S. registration.

ii) Adequate funding for Minor Use Registration Trials and Residue Analysis

Researchers, extension personnel, industry and grower cooperators require adequate, consistent and stable funding to ensure completion of requirements under the minor use system. More flexibility with regard to funding minor use projects is required and more communication with the sponsors of minor use projects is needed. AAFC needs to seriously consider funding that addresses the needs of specific projects under GLP and at the very least, return to the 75% funding of the project costs.

Unreasonable and costly additional studies seriously erode the ability of Ontario growers to compete in the world market and discourages companies from introducing new technologies to Ontario. US growers may lose many of their traditional pest control products, however many new alternatives are being evaluated and registered to replace them.

OPMRSC RECOMMENDATION #2.

Target Agencies:
Ontario Ministry of Agriculture, Food and Rural Affairs
Ontario Agricultural Research Institute

Title: Access to Unbiased Extension Information, including Support for Pest Management Programs, Strategies, Research and Delivery

Details:
In light of the re-organization of extension services within OMAFRA, including significant changes in the way that extension information and IPM programs are

delivered, the OPMRSC recommends that OMAFRA continues to provide unbiased extension expertise that includes field visits and that OMAFRA play a lead role in integrating the various IPM services, including providing training of crop scouts and other technical support, such that growers can continue to have confidence in the IPM programs. OMAFRA also needs to maintain a role in the development and field testing of IPM and ICM programs and in supporting research for these programs. It is understood that OMAFRA intends to continue its role in training pest management scouts and developing programs, but the committee wished to emphasize the need for this continuing role and involvement in extension and IPM in the province.

Background:
Growers in Ontario need access to the unbiased expertise of extension specialists. Technology such as the internet can be useful, but field visits to diagnose problems and individual contacts are essential as well. With the loss of the OMAFRA supported IPM programs, there is a need for growers to have access to high quality scouting services. The AIMS program, through the sponsorship of the OF&VGA, has stepped in to provide these services, and AIMS is encouraged to expand the services they offer to Ontario growers. Similarly, the Ontario Weather Network has offered disease forecasting and other services to some growers. Private companies are also offering scouting services in some areas. Growers may have no programs available , or may have to choose among several programs. In all cases, they need to have confidence that an effective program will be provided by trained and qualified personnel, and that the advice will not be biased by considerations such as increasing sales of pesticides or fertilizers. The role of OMAFRA in providing unbiased expertise and maintaining standards in the various programs is essential to maintaining grower and consumer confidence.

OPMRSC RECOMMENDATION #3.

Target Agencies:
Ontario Ministry of Agriculture, Food and Rural Affairs
Ontario Agricultural Research Institute

Title: Increased Funding for Crop Protection Research

Details:
In light of the success of the Food Systems 2002 program to date, the OPMRSC wishes to convey to OMAFRA, Innovation and Risk Management Branch and ARIO, the need to continue support towards research which accomplishes the goals and philosophy of the FS2002 program which have been expanded in the Pesticide Reduction and Safe Usage of the Special Research Program, . The goal of improved integrated crop management strategies leading to high quality food supplies requires a long-term and dedicated commitment. The OPMRSC requests that annual funding for any new FS2002-like programs be returned to the $800,000.00 level.

Background:
During the course of the Food Systems 2002 program, many successful and economically sustainable research and development projects have led to significant improvements to IPM programs and pesticide reduction. According to recent figures, there has been a 30% reduction in the amount of pesticide used in Ontario and a concurrent 30% reduction in the risk associated with their use. It was also identified that further public resources be targeted to fruit and vegetable crops.

The development of IPM and more recently ICM (Integrated Crop Management) programs requires a stable and dedicated source of funding to ensure that new problems and serious on-going problems are addressed. In light of the general 'public good' that such programs have achieved to date, it is recommended that they be fully supported in the future. Over the past five years, the funding available for this type of research through the OMAFRA competitive funds dropped from $800,000 per year for the Food Systems 2002 program down to $200,000 per year for the portion of the OMAFRA Special Research Program that deals with similar issues. This funding needs to be restored.

OPMRSC RECOMMENDATION #4.

Target Agencies:
Agriculture and Agri-Food Canada, Research Branch
University of Guelph, Dept of Plant Agriculture
University of Guelph, Laboratory Services Division

Title: Public Sector Support for Good Laboratory Practices (GLP) Compliance and Capability to Support Minor Use Registrations

Details:
It is strongly recommended that the University of Guelph, including Laboratory Services and Agriculture & Agri-Food Canada (London, Harrow, Vineland and St. Jean sur Richelieu) move to certify personnel and field station sites as GLP compliant in time for the 2001 growing season.

The OPMRSC recognizes that some of the University of Guelph satellite campuses are moving toward GLP compliance and will be ready for the 2001 season. GLP certification of several sites is needed to meet the requirements for several sites for the trials and for the different commodities, such as fruits, vegetables and ornamentals.

Background:
If minor use residue trials are to be conducted in Canada, GLP certification is required. Without access to GLP compliant research field sites and personnel, minor use work will be seriously impeded. The delays in the minor use system already place Ontario growers at a disadvantage in the worldwide marketplace. Lack of access to GLP compliant sites will further slow the minor use process. This includes a commitment from the University of Guelph research facilities and the Laboratory Services Division to become GLP

certified for the 2001 season, and for more AAFC research stations, including St. Jean sur Richelieu and AAFC London,

Starting with the year 2001 growing season, all residue trials will have to be conducted as GLP compliant. A large number of minor use projects are proceeding or being planned for horticultural crops in the coming years. If the field stations we rely upon to conduct these trials are not GLP compliant, the trials cannot proceed and many minor uses may not be completed. Most minor uses are already delayed by funding problems and other PMRA requirements. In light of the US FQPA and on going pest management problems in many crops, the minor use system is the only mechanism available to address growers' concerns and the sustainability of the industry. This is the main program available to replace old materials, that are being lost as a result of FQPA and the amalgamation of the pesticide industry, and to achieve the registration of more IPM friendly materials.

OPMRSC RECOMMENDATION #5.

Target Agencies:
Agriculture and Agri-Food Canada

Title: Maintaining Research Capacity and Effective Research Teams in Ontario

Details:
Several senior scientists within AAFC stations in Ontario, and particularly in Vineland, are nearing retirement age. A comprehensive plan to provide for orderly and effective replacement of the research expertise is needed. The emphasis must be on maintaining and enhancing the synergy that results when there are research teams with related disciplines that can address the complicated pest management and integrated crop management issues on groups of crops.

Background:
Several of the horticultural industries have concerns and requests that involve maintaining research teams and planning for replacement of expertise in preparation for the retirements of several senior researchers with valuable skills and experience.

The greenhouse floriculture industry requests that a permanent floriculture pest management program be established at AAFC Vineland. In 1997, industry funding was used to fund five specific projects in Vineland. Now a more permanent commitment to this research is requested. Both a plant pathologist and entomologist are needed to develop the necessary knowledge and understanding of the unique growing environments and to establish meaningful ongoing research programs. As an example, there is a large team of researchers at AAFC Harrow, who focus on greenhouse vegetables, including production, pest management and post-harvest issues. The vegetable industry has certainly benefited from this rage research commitment.
The grape and wine industry also needs research expertise, including a entomologist (insect ecologist or related discipline) to respond to changes in the pest complex and control options. Maintaining expertise in plant pathology and nematology is also critical

to this and other industries , such as berry crops. A commitment has been made to fill the nematology position, but because there are so few trained nematologists in North America, it would be wise to begin recruiting for a replacement before the current nematology position is vacant.

OPMRSC RECOMMENDATION #6.

Target Agencies:
Ontario Ministry of Agriculture, Food and Rural Affairs.
University. of Guelph, Laboratory Services Division

Title: Maintain Monitoring and Research to Address Issues of Pesticide Residues and Food Safety

Details:
The potential for pesticide residues that exceed the MRL to appear in food produced in Ontario still exists, despite the major advances in pest management. This remains a food safety issue, and is critical for maintaining consumer confidence, and in some cases, export markets. The OPMRSC recommends continued support of OMAFRA's pesticide residue monitoring and analysis program.

Background:
The potential for higher than MRL pesticide residues in food products has long been a concern for the greenhouse and protected crops industry and is more recently an issue for honey production, as apiculturalists respond to the need to control mites in bee hives. However, these issues affect all food products, in terms of both ensuring food safety and consumer confidence in the safety of food. An effective monitoring and residue testing program must be maintained to address these issues.

Another part of this issue, the availability of safer, more environmentally crop protection materials, including biological controls is addressed in another recommendation. Effective integrated pest management integrated crop management programs are also an essential component.

OPMRSC RECOMMENDATION #7.

Target Agencies:
University of Guelph, Laboratory Services Division
Ontario Ministry of Agriculture, Food and Rural Affairs

Title: Improved Access to PCR and Rapid Diagnostics for Ontario Agriculture

Details:
It is recommended that the Pest Diagnostic Clinic implement and make available PCR-based diagnostic tests for pathogens on crops in Ontario. Also, that any business cases or

marketing surveys be based on offering several of these tests, not on evaluating single tests or services.

Several new diagnostic techniques have been developed recently that are based on PCR technology. These techniques allow for accurate and rapid diagnosis of many pathogens, including viruses and fungi. These techniques reduce the time needed for a diagnosis from weeks, months, in the case of some grape viruses, years, to a few days. The implementation of these techniques by the University of Guelph Pest Diagnostic Clinic, part of Laboratory Services Division, would greatly benefit Ontario agriculture, by providing rapid identification of a pathogen, such that appropriate control or containment measures can be taken in the most timely manner.

Background:
Several diagnostic procedures based on PCR are now available, including tests for the aster yellows phytoplasma in aster leafhoppers, that is a serious problem on lettuce and carrots,anth racnose on berries,plum po x on nursery stock and viruses on grapes and raspberries.

When requests for PCR- based or other rapid diagnostic tests have been requested, Laboratory Services Division (LSD) as looked at offering the single test for a single crop. The reply has been that the business case does not justify offering this test. These rapid diagnostic tests would benefit a number of sectors of the industry. Additional tests are being developed each year, and several of the tests that have been developed have been funded by OMAFRA and the FS2002 program. The OPMRSC recommends that LSD implement and make available these tests considering: a) that based on several crops and pathogens the technology be more cost effective and that b) once a track record for rapid response has been developed, the demand is likely to increase.

Ontario Weeds Committee Report

ONTARIO WEEDS COMMITTEE REPORT

Issues affecting the weed management industry.

Herbicide tolerant crops are having many different effects. It is felt they will have an impact on the way weeds will be managed (less residual, thresholds etc…). There is also an impact on the value of the herbicide market, which will drive some players out. The immediate benefit may be a reduction in the weed control cost for growers, but it the long term, this may prevent the introduction of new herbicides.

Company mergers are still occurring (Aventis, BASF, Syngenta). This may have an effect on the number of people employed in the industry. A possible impact on the number of herbicides being offered is also possible and this may affect minor use labels.

In general, there is a perception the value of agriculture is low compared to the pharmaceutical industry. This will impact the introduction of new herbicides, as returns on investments may not reach threshold values.

It is felt that an increase in field crops files in the minor use system is slowing the process.

Herbicide residual activity, especially following field crops is still a concern.

Problem weeds, that is those weeds that tend to show up under no-till systems are also requesting attention. There is a need from growers for current information on which treatments are best. However, treatment of these weeds constitute are off-label

The upcoming Supreme Court judgment on pesticide-use ban by municipalities will be closely watched. Depending on the outcome, an impact on the agricultural community is highly possible.

OWC Research Priorities

Note: these priorities are only in the draft stage. They will be discussed further at the April meeting of the OWC. They are listed according to the different groups they have been forwarded to. There is currently no ranking according to importance, but this will be addressed at the April meeting.

Horticultural crop weed issues:

Minor Use herbicide registration.

Re-cropping or plant-back studies to establish safe intervals between herbicide application and planting of sensitive crops.

Integrated weed management systems (IWM) for horticultural and speciality crops, particularly where herbicide options are limited or unavailable.

Control strategies for **problem weeds** in horticultural crops.

Interactions of weeds or weed control methods **with insect or disease** problems, e.g. asparagus rust and pigweed species.

Field crop weed issues:

Determine weed specific (biologically effective) herbicide rates and critical factors affecting their performance. This information will help growers minimize herbicide use by adjusting the dose to the particular weed problem. It includes the effect of sub-lethal doses on weed seed production, viability and germination, and critical factors affecting product efficacy (e.g. water quality, field and weather conditions, addition of adjuvants such as vegetable oil, application in mixtures with N-fertilizer, time of day, soil fertility, variable rate application, etc.).

Develop management strategies for **problem weeds** (e.g. wild carrot, Canada fleabane, horsetail, swamp smartweed, etc.).

Develop and evaluate **site-specific methods** of weed management as a means of reducing weed control costs and/or improving efficiency by targeting only those areas of a field where weed problems occur (with a particular emphasis on no-till systems and perennial weeds).

Develop a comprehensive **herbicide resistance management** strategy to prevent and reduce herbicide resistance problems in Ontario, including guidelines on the use of tank-mixtures and rotation of herbicide groups.

Develop **integrated weed management (IWM)** systems for field crops

Evaluate effectiveness of **new herbicides**.

OPMRSC Weed Issues (Cross-commodity):

Minor use registrations:
Herbicide efficacy and residue studies leading to registration of minor use products in horticultural crops, speciality field crops (e.g. beans), or for problem weeds not currently on product labels in field crops, under the URMULE and URMUR programs.

Herbicide Reduction and Safe Usage:
Evaluate **advanced sprayer technologies**, including site-specific applications, which have the potential to reduce herbicide rates, spray drift, spray volume, sprayed area and effects on non-target organisms, to meet the needs of custom applicators and growers.

Establish **economic thresholds** for major weeds with consideration for crop quality, dockage, harvest moisture, and weed seed-bank issues.

Evaluate effectiveness of cost-effective, broad-spectrum **biological control** agents, including seed predators, to replace or reduce herbicide use in crop and non-crop areas.

Evaluate the effectiveness of cultural (e.g. crop rotation) and mechanical methods of weed control in combination with weed specific herbicide rates (minimum lethal dose) to minimize herbicide use within **integrated weed management (IWM) systems**.

Environmental Issues:
Evaluate and monitor the ecological and environmental **impact of herbicide tolerant crops**, including shifts in weed populations, development of herbicide resistant weed biotypes, pollen movement and effects on biodiversity above and below ground.

Determine the **fate of recombinant DNA** from herbicide tolerant crops in the soil in relation to fungi and bacteria.

Develop improved methods for the rapid, efficient **detection of herbicide residues** in relation to: (I) off-site contamination, e.g. drift, run-off, leaching, (ii) herbicide carry-over and crop rotation, and (iii) applicator, grower, bystander exposure to dislodgeable foliar residues on plants.

Evaluate and monitor the impact of **unsprayed buffer zones** along field margins on weed population dynamics and crop yields, and develop vegetation management systems for field margins, roadsides and rights of way.

Weed biology and ecology:
Basic research on weed and seed biology and ecology, including population dynamics, physiology and weed-crop interactions.

Emerging Pests / Invasive weed species
Biology and control of herbicide resistant weeds in field and horticultural crops.
Identification and management of invasive weed species in crop and non-crop habitats, e.g. purple loosestrife

Fruit Technical Working Group Report

Fruit Technical Working Group

The fruit Technical working group met Nov. 3 to:

Review submissions and changes to Publication #360, Fruit Crop Recommendations. Although this was a supplement year, many changes and additions were submitted and have been organized in chart form for this report.

1.Discuss emer ging issues in pest management.

2.Sugg est research priorities. These were not ranked and were passed to the appropriate OHCRSC subcommittee for their consideration

3.Pesticides for minor use re gistration were not discussed but Gerry Walker outlined the new procedure for addressing this process. Those from each commodity group decide to prepare a list for the OACCS subcommittee to expedite this process.

4. Member ship of the committee- this was updated and membership list is included in this report

The committee was active early in 2000. An ad hoc committee was struck to review and to approve recommendations for the use of Sovran, registered in early 2000.

Pest Management Issues and Recommendations:

Impact of Pesticide Re-Evaluation Regulations USDA-EPA –Food Quality Protection Act - PMRA-Organophosphate Re-evaluation

The regulatory reviews and pesticide label revisions announced by the USA-EPA re: the Food Quality Protection Act, combined with Canada's Pest Management Regulatory reevaluation of the organophosphate insecticides has the potential to adversely affect the fruit industry. This is even more complicated when processors or a special interest group such as World Wildlife Fund place additional restrictions on use as a result of consumers concerns, e.g. restrictions on use of EBDC fungicides to pre-bloom only.

These reviews not only impact upon the organophosphate (OP) insecticides, but also on the other pest control products as they come up for review, eg the sterol inhibitor Ronilan. Ontario fruit growers are concerned over the potential loss of OP's and carbamates, but a more serious consideration is the potential loss of fungicides including the EBDC's and selected sterol inhibitors.

The fruit industry is dependent upon pest control products such as Guthion (asinphosmethyl) Sevin (carbaryl) and Rovral (iprodione). Ontario has as excellent track record on the production of safe quality fruit produced through scientifically documented Best Management Practices including Integrated Pest Management (IPM). These programs have taken years to develop. The potential loss of key products regulatory action or unrealistic restrictions on the use pattern would seriously impede the continued of a safe, high quality product.

Recommendations:

- We encourage research and extension personnel to continue to develop and refine viable and sustainable pest control strategies that are consistent with the objectives of IPM and risk reduction
- We strongly urge AAFC to fill the vacant population ecologist entomologist and soon to be vacant plant pathologist position at the Vineland AAFC location as soon as possible.
- We urge further work to evaluate the "fit" of newer pesticide alternatives and reduced risk products
- We recommend additional research to demonstrate the "fit" of the older more traditional products including azinphosmethyl, carbaryl and fungicides such as iprodione and the EBDC's
- We strongly recommend research to support minor use and harmonization of control products that are available to our U.S. counterparts
- We recommend that OMAFRA work with growers to raise the profile of IPM. Highlight the achievements of the IPM programs to the consumer and the message that Ontario fruit growers take very seriously the health and safety of the products they provide for consumers.
- We encourage PMRA to provide an opportunity for the fruit industry as a whole to comment on re-evaluations of pesticides before decisions are made, similar to the EPA's National Registry.

Publication #360 Challenges

It is a challenge to keep Publication #360 grower friendly and up to date with label changes. Label changes are becoming more difficult to keep track of, due to re-evaluations of older, traditional pesticides and merging of chemical companies. Trying to develop policy that includes both pesticides with rates based on a dilute basis and newer products with rate ranges based on tree row volume is difficult. For publication #360, the grape calendar (see next section) was reviewed and revised.

1. We encourage that the OCPC subcommittee chairs and the editors of the OMAFRA publications meet to develop common policies around these issues.

Deadline for Special Research Program:

The OHCRSC sub-committee must now determine both pest management and production research priorities. Because many of these committees do not meet until December and the OMAFRA, deadline is December 1, 2000, researchers will be using last year's priorities for their projects.

We recommend that a more appropriate deadline be set for the Special Research Program that will allow current year's research priorities to be addressed.

GINSENG TECHNICAL WORKING GROUP REPORT

EXECUTIVE SUMMARY:

Current issues and needs facing the ginseng industry in Ontario were discussed at this meeting. Research needs were addressed with a view to establishing future competitiveness. Current setbacks due to climate conditions will affect the industry for 2 to 3 years.

The upswing in root prices, albeit modest, has allowed growers to exercise more caution in selling root. The most important factor contributing to the stability of pricing this year has been grower access to the Advance Payment Program. The other factor affecting market stability has been the successful financial restructuring of Chi Na Ta, Canada's largest producer of ginseng root.

The Ontario Industry has adopted a pro-active approach in dealing with issues. This approach was exercised in negotiations with the Federal Government regarding pricing levels for the Advance Payments program to the benefit of the entire industry. The industry has also been pro-active in dealing with the marketing issues surrounding use of the fungicide Quintozene by participating in Nation-wide discussions and supporting an Emergency Use permit for an alternative product.
By maintaining a long-range view of industry directions and applying this to research needs the industry has positioned itself to become and remain competitive in the global market for ginseng root and ginseng products.

STATE OF THE INDUSTRY:

The 2000 season has been difficult. The result of prolonged wet and cool conditions has been increased root disease and the forced harvest of younger gardens.

Crop size:

Ontario: 3.4 million lbs, down from 1999; projected down further in 2001
1 – 1.5 million lbs sold or consigned as of Dec 12th, 2000

Wisconsin: 600,000 lbs, down from 1999, projected down further in 2001

B.C : 2 million lbs, stable, projected stable in 2001

Crop prices:

$20 - $25/lb depending on the style of the root
Sales are currently slow and no firm price has been established yet.
$7.50/lb advance payment

Growers have maintained a cautious approach to selling. The advance payment program has allowed growers to hold root until prices are acceptable. Both the growers and the buyers appreciate this stability. Past examples of large growers selling below the cost of production to meet financial commitments left the industry unstable and vulnerable.

Smaller growers were forced to sell at these low prices and buyers were faced with trying to unload large consignments and were forced to accept low prices in turn. Open communication between B.C. and Ontario has led to the understanding that the majority of growers will wait to sell until prices are suitable. This should lead to a longer than normal buying season, but a more stable price. These efforts have were initiated by the Ginseng Growers Association of Canada in Simcoe.

Restructuring of Canada's largest grower, Chi Na Ta (CNT), has lent stability to the market. They now have a reduced dependency on the bulk root market and have built strategic partnerships in China.

Crop Quality:

2000 yields are down 15-30% from that expected. There is a high incidence of Rusty Root and this downgrades the value. The diseases resulting from the cool wet season affected mostly 3's and 4's. Two-year-old gardens were slightly affected and seedlings appear to be unaffected. An accurate assessment cannot be made until all of these gardens are harvested.

The two diseases that remain of concern to the industry and that limit yield and quality are Rusty Root and Cylindrocarpon.

Diseases occurred in gardens where soil type was marginal for ginseng such as heavier, poorly drained soils. Gardens with low, wet areas suffered severe losses. Diseases were successfully controlled only where growers did not relax the spray program.

EMERGING PEST MANAGEMENT ISSUES:

- Cylindrocarpon root rot is appearing with increasing frequency in gardens. Some gardens have experienced losses in the range of 50% and occasionally as high as 90%.
- The incidence of Rusty Root is increasing. Loss of quality has forced some growers to accept prices below the cost of production. Losses due to Rusty Root can be as high as 75%.
- Lack of disease control in some gardens has raised the issue of emerging resistance to the fungicide Ridomil. Ridomil is one of 2 products used in tandem for the control of Phytophthora root rot. Ridomil resistance, if widespread, could lead to serious losses.

INDUSTRY PEST MANAGEMENT NEEDS:

- Use of the product Quadris on ginseng for the control of *Rhizoctonia* must be made clear to growers especially in regards to timing of application. It will be essential this coming spring to get the product on gardens after the ground thaws and before the seeds begin to sprout.
- There is an urgent need to find a product that controls Cylindrocarpon.

URMULE PRIORITIES:

- To pursue the URMULE for Quadris or request another emergency exemption
- Maxim (seed treatment)
- Chlorine (seed disinfectant)
- Dividend (seed treatment)
- Select (herbicide, cereals)

PEST MANAGEMENT PRIORITIES

- To determine the causes and evaluate control measures for Rusty Root.
- The disease Rusty Root currently reduces root value and in some cases can limit yields in ginseng. Estimated losses can be as high as 75%. The causes of Rusty Root are unknown.
- To screen products for the control of *Cylindrocarpon destructans* in ginseng.
- Cylindrocarpon currently causes 10-50% losses in ginseng gardens. If three year gardens that exhibit Cylindrocarpon infection are left for the fourth year losses can be as high as 90%. There has been sufficient new chemistry on the market since the original work was done on this at the University of Guelph and AAFC Delhi in the 1980' and early 90's to warrant a new screening trial.

- Germplasm development for the selection of specific characteristics. Existing and developing strains must be evaluated for the desirability of various characteristics. There needs to be a means of maintaining and screening germplasm for such evaluation.

- Evaluation of the development of field resistance to Ridomil and other fungicides. Lack of disease control in a garden can result in 30-90% loss. In order to provide appropriate advice to growers and to maintain disease control it is necessary to determine whether field resistance has developed. A survey of ginseng pathogens associated with economic losses in gardens would benefit the industry.

GREENHOUSE FLORICULTURE TECHNICAL WORKING GROUP REPORT

Working Group Membership

With the changes to the OASCC structure in 1999, the floriculture working group also changed considerably. Prior to 1999, pest management issues were addressed by a joint Protected Crops Sub-committee (floriculture, vegetables, mushrooms). After the OASCC changes were made however, all floriculture issues (including pest management) were covered by the Floriculture sub-committee of OHCRSC. This has necessitated a change in the Working Group membership as well. The current Working Group has the same membership as the Floriculture sub-committee of OHCRSC.

Working Group Activities

Publication 370, *Production Recommendations for Greenhouse Floriculture*, is a new publication which has arisen because of the decision to split the previous greenhouse publication (Pub. 365) into two: one for Greenhouse Floriculture and one for Greenhouse Vegetables.

Publication 370 was rewritten in 2000 with considerable changes. The Working Group did not meet formally to approve changes, because of the difficulty in getting that number of people together, and because the process would be too unwieldy. However, a smaller sub-group of four to five people which included industry, OMAFRA, University of Guelph. and AAFC, were responsible for the preparation and editing of the new publication.

As the new Chair of the OHCRSC sub-committee, I propose at the next meeting to formalize this smaller sub-group (with the committee's approval), to deal with changes to recommendations and Publication 370. Other pest management issues such as research priorities, minor use priorities and emerging issues would still be dealt with by the full committee.

Emerging Issues

Widespread failure of imidacloprid to control whitefly in poinsettia was evident in the greenhouse industry this year. While there is no proof that resistance may be the cause, it has to be viewed as a potential suspect; especially given the sudden widespread problems (reported throughout Canada and the north-east US), and the fact that only one species of whitefly (*Bemisia argentifolii*) was involved. The other major whitefly species (*Trialeurodes vaporariorum*) still appeared to be well controlled. Further investigations are being conducted in collaboration with Cornell University.

If resistance is documented, it may have implications for greenhouse and field vegetable production. *B. argentifolii* has a strong preference for poinsettia, but it has also occasionally developed damaging infestations on other ornamental crops and vegetable crops such as tomato.

Recommendations

Minor Use Pesticide Registrations

The committee continues to express its concern over the apparent lack of commitment by PMRA to seriously address the URMUR aspects of the Minor Use Pesticide program. With industry support in the last 2-3 years, it was felt that excellent progress has been made with new pesticides obtained through URMULE. However, many of the most urgent pesticide needs for the industry can only be addressed though URMUR. The committee feels that the principle behind URMUR is excellent, but that it is not being acted upon by PMRA. This view is reflected by comments made to various committee members from registrants in the US who have suggested that the process is too onerous in Canada for them to seriously pursue bringing new products into the marketplace here. With the impact of FQPA starting to be felt, the need for new products is becoming increasingly urgent.

The bulk of the new products that the industry is seeking under this program are reduced risk (in the US), with high compatibility with natural enemies (a major consideration in the greenhouse industry where biocontrol plays a major role in pest management). Many of the products also fall into the microbial category, often manufactured by smaller companies with limited resources. Even though registration fees are waived for such products, the URMUR program provides little incentive for these companies to become involved, since even repackaging from a US to Canadian format can be an expensive undertaking ($15000 - $25000). Efficacy requirements may also be inadequate for the more stringent regulations in Canada compared to the US.

A further concern is the need to address the gap that exists between URMULE and URMUR. There are active ingredients currently registered that are not eligible for either program. For example, an AI may be registered for a use in a formulation not suitable for that needed by the industry. URMULE cannot be used because of the formulation difference. The same AI however, may be registered in an appropriate formulation in the US, but is ineligible under URMUR because the active is already registered in Canada.

Recommendation

That PMRA make a serious commitment to minor use registration in all its aspects. PMRA should in particular address the above concerns to make the program more workable and attractive to companies with products having a novel mode of action (especially microbials). PMRA should also address the current gap existing between URMUR and URMULE, so that potential new products are not lost.

RESEARCH PRIORITIES AND RECOMMENDATIONS FORWARDED FROM THE FIELD CROPS AND HORTICULTURAL CROPS COMMITTEES

Pest Management Research Priorities From Ontario Field Crops Research and Services Committee (FCRSC) - 2000

Field Crop Research and Service Committee research priorities are listed below. For details of the priorities, please see the FCRSC 2000 annual report:

From the Field Crop Protection Sub-Committee:

High Priority
Fusarium
Soybean Cyst Nematode
White Mould
Root Rots including Pythium, Phytophthora
European chafer
Corn Rootworm
European Corn Borer

Medium Priority
Potato Leafhopper in edibles
Alfalfa Weevil
Cereal Leaf Beetle
Corn Leaf Diseases (Grey Leaf Spot)
Slugs
Bean Leaf Beetle
Lygus in alfalfa and canola

Low Priority
Soybean Aphids
Cutworms
Tarnish plant bug in edibles

ISSUES

Low priority
Anthracnose edible beans - seed treatment work and minor use.

Cutworms on corn – Simcoe area has had a problem. Especially no-till situations. Transgenic and seed treatment work being done.

Tarnish Plant Bug in edible beans – Has been on this list for years. It is a small crop and doesn't get funding priority.

Seed-corn maggot – seed treatment work is being done. Not really necessary for public funded research.

Blackleg in canola – resistant varieties – Committee couldn't recall if any work was being done in this area.

Not a research priority Issue:
Stalk Rot – fusarium is a continual problem with stalk rots being only occasional. We will keep an eye on this.

Powdery Mildew in wheat – Not a huge priority. Lots of resistant varieties. Foliar treatments there. Priorities - Send message to cereal crop committee that screening needs to include Powdery Mildew and that more statements need to be made for each variety regarding Powdery Mildew.

Flea Beetle in Canola – make it an extension priority not for research

Mexican Bean Beetle – Take off the list

Rust seed companies know that they need to take this seriously but not necessarily from public funding. Include this with overall corn diseases

New ones to be added to research list
Slugs on beans – Medium priority
Flea Beetles – extension issue only

Stalk Rots and Rust – industry concern

From the Ontario Pulse Crop Sub-Committee:
- Cultivar development and genetic improvement of white and coloured beans
- Evaluation of new seed treatments for root rot
- Evaluation of New Seed Treatments for Leafhoppers

From the Ontario Corn Sub-Committee:
- Breeding for natural resistance to corn leaf diseases and to European Corn Borer
- Resistance to Fusarium Ear Rot

From the Ontario Oil and Protein Seed Crop Sub-Committee:
- Breeding for resistance and management of nematodes
- Develop management strategies for problem weeds in reduced-tillage soybean Production Systems.
- Evaluate and monitor the ecological and environmental impact of herbicide tolerant crops, including shifts in weed populations and development of herbicide resistant weed biotypes.

Pest Management Research Priorities/Recommendations From Ontario Horticultural Crops Research and Services Committee (OHCRSC) - 2000

Horticultural Crop Research and Service Committee research priorities are listed below. For details of the priorities, please see the FCRSC 2000 annual report:

Agroforestry:

recommendations:

- Pursue registration of insecticides for nut trees
- Registration of the Herbicide Stinger for Use in Chirstmas Tree Plantations

Research Priorities:

- Pursue registration of insecticides for use in commercial nut orchards.
- Pursue registration of herbicides for use in Christmas tree plantations.

Apiculture:

Research Priority recommendations:

- Immediate Development of a Detection Strategy and Management Protocol for the Small Hive Beetle, *Aethina tumida*.
- Development of Varroa Mite-Resistant Bee Stocks Using Different Selection Approaches and Integrating Resistance into Existing Ontario Tracheal Mite-Resistant Bee Stocks.
- Further Development of an effective integrated pest management (IPM) program for control of parasitic mites and infectious diseases of honey bees.
- Quality of Hive Products to Meet Consumers Expectations.
- Maintain of the Apicultural Regulatory and Extension Programs in Ontario
- Registration of CheckMite™ (Coumaphos) and Guard Star®.
- Federal Registration of Formic Acid Mite-Away.
- Monitoring for Varroa Resistance to Apistan®.

Apple

The rankings shown in brackets represent the priority of the issue when placed together with all the other research/extension priorities identified by the committee:

- (3) Integrated Management of Apple Diseases
- (4) Tree Mortality Factors: Fire Blight and Dogwood Borer
- (6) Development of Advanced IPM Program for Apples
- (7) Sustainable Management Practices for Obliquebanded Leafroller
- (8) Develop Management Techniques for European Apple Sawfly

The top 3 "Emerging Pest" priorities:

1. Obliquebanded Leafroller
2. Fire Blight
3. Dogwood Borer

BERRY CROPS

Special Research Priorities

I) Minor Use Priorities	
Strawberries	· Quadris or suitable fungicide for anthracnose and leaf diseases · Dual Magnum for weeds · Blazer for weeds
Raspberries	· Sinbar for weeds · Matador or IPM friendly insecticide for TPB, and other raspberry pests · Quadris or suitable fungicide for anthracnose and cane diseases control
Blueberries	· Admire or Actara for white grubs · Methyl anthrinilate for bird control Dual Magnum for weeds
Cranberries	· Pursuit herbicide
Currants, Gooseberries	· Devrinol for weed control · Matador or IPM friendly insecticide for general currant pests (i.e. fruitfly/worm, sawfly, imported currant worm) · Topas for rust

2) Pesticide Reduction	
Strawberries	· Integrated weed control strategies · Tarnished plant bug control, organically acceptable · Disease management and forecasting systems (anthracnose, leaf diseases, etc.)
Raspberries	· Integrated weed control strategies · Mating disruption of raspberry crown borer · Disease management and forecasting systems (cane and leaf diseases
Blueberries	· Integrated weed control strategies · Integrated pest monitoring programs for insect and disease control (includes monitoring techniques for blueberry maggot, cranberry fruitworm, white grubs)

III) Emerging Pests	
Strawberries	· Control and management of anthracnose: on day-neutral and summer bearing strawberries · Tarnished plant bug on day-neutral strawberries: we have no insecticide which a short days to harvest interval which is required for TPB control on day neutrals · Biological mite control of mites on strawberries and raspberries
Raspberries	· Tarnished plant bug: no products currently registered · Development of rapid detection methods for viruses and other diseases Biological mite control of mites on strawberries and raspberries
Blueberries	· Monitoring and control of white grubs: significant long term damage to this perennial crop: no insecticides registered · Bird control (high priority for growers for years) Blueberry maggot

Crucifer Crops

Research and Services Priorities:

1. Pursue minor use pesticide registrations for improved control of insects, diseases and weeds of crucifer crops, especially specialty crucifers.
2. Investigate, develop and transfer practical pest control methods for cruciferous crops.
3. Group 2 (New pests) includes evaluation of the biology and management strategies for vegetable leafminers and swede midge.
4. There is a need to investigate fertility practices for crucifer crops: & S
5. Develop an improved black rot disease management strategy with emphasis on extension

of known greenhouse management strategies and seed treatment technologies. I

6. Continue to survey and identify diseases and pests of specialty crucifer crops with emphasis on detecting problems which may be a threat to traditional crucifer vegetables, including **virus** diseases and developing management strategies.

Special Research Program Priorities

Minor Use Projects:
First three priorities on previous page

Pesticide Reduction & Safe Usage

Cabbage, Cauliflower & Broccoli:

- Evaluation of alternatives to pesticides for effective pest control which includes trap crops, biological controls, cultural practices, monitoring strategies, testing of reduced risk materials, resistant variety evaluations and amended use patterns.
- Evaluation of strategies that reduce diseases through fertility and cultural practices.

Rutabagas:

- Evaluation of strategies to reduce damage from cabbage maggot and to find alternatives to currently labeled organophosphate insecticides.

Specialty Crucifers:

- Evaluation of alternatives to pesticides for effective pest control which includes trap crops, biological controls, cultural practices, monitoring strategies, testing of reduced risk materials, resistant variety evaluations and amended use patterns.

Emerging Pests

- Investigating the biology, distribution and potential management strategies for the **swede midge.**
- Investigating the biology, distribution and potential management strategies for the **pea leafminer.**

Greenhouse Floriculture

Emerging research and Service needs

1. Integration of Nutrient, Water and Disease Management Strategies from an Environmental Perspective
2. Optimisation of the Greenhouse Environment
3. Development of Improved Floricultural Crops and Production Techniques

4. Development and Implementation of IPM programmes in Floriculture
5. Post Harvest Handling and Shelf-Life Issues with Potted and Cut Flower Crops

Recommendation forwarded to OPMRSC:
To insure the viability of the Ontario greenhouse floriculture industry, it is recommended that the reinvestment of financial resources into personnel by Agriculture and Agri-Food Canada, University of Guelph and OMAFRA is essential if innovative research addressing production and pest management issues and effective "one-on-one" grower technology transfer is to continue (see page 201 of the OHRSC Annual 2000 report).

LOW ACREAGE AND MINOR CROPS

Minor Use Priorities

Cucurbits
6. assure….(grasses)
7. viper
8. command…formerly merit…(broadleaf weeds)
9. admire ST…(striped cucumber beetles)
10. poast….(grasses)
11. nova - can we drop assure? Or poast? Exchange nova (1) for assure (1) (refer to J. Chaput)

Peppers:
1. command…broadleaf weeds
2. poast…(grasses)

Asparagus
1. linuron…(emerging weeds during harvest)
2. azoxystrobin…(purple spot)
3. halosulfuron….(late season pigweed and broadleaf weeds)
4. spinosad…(control of asparagus beetles)
5. tebuconzole….(rust)

Snap and Lima beans
1. (refer to J. Chaput)

Chicory
2. upbeet
3. assure (grasses)
4. benifin
5. quadris…(foliar disease - cercospora)

Sweet potato
1. devrinol….

2. Command…(broadleaf weeds)
3. Aztec…(wireworms)

Herbs
1. biopesticides
2. beauveria basianna
3. insecticides and fungicides for culinary …

Hemp
1. (refer to J. Chaput)

Eggplant
2. imidacloprid…admire
3. alternate to imidacloprid
4. pyrimite….(mites)

Sugarbeets
1. eminent…tetraconizole…..fungicide…Sipcon out of Georgia-URMULE
2. 4-way microrate….(weeds)
3. dual/magnum (poast) ….(weeds)
4. folicur….tebuconizole….cercospora

Millet/Sorghum Grains
1. atrazine + bromoxinil….(weeds)
2. vitaflow….carbathii

Research and Services Priorities

1. Pursue minor use pest control product registrations for improved management of insects, diseases and weeds of low acreage and special crops which have a poor IPM toolkit.
2. Continue to evaluate and enhance variety research for each specific crop that is considered low acreage and special including cucurbits, peppers, asparagus, snap beans, chicory (root), sweet potato, garlic, herbs (culinary/medicinal), stevia, egg plant, sugarbeet, millet/sorghum grain, hemp, spinach, rhubarb, okra.
3. Enhance Nutrient management research including evaluating current recommendations through crop response research
4. Continue and enhance research and technology transfer in the area of post harvest handling of low acreage and special crops.
5. Enhance a third party, non-biased Integrated Pest Management Program and an accurate and reputable field diagnostic service for growers.

Recommendations to OHCRSC and OPMRSC

The numbers in the brackets refer to the number of the recommendation recorded in the OHCRSC annual report (see page 203).

- ***Recommendation 1 (39):*** That immediate funding be made available to producers and researchers of low acreage and special crops for conducting trials to GLP standards.
- ***Recommendations 2 (40):*** GLP certification of personnel and field station sites be finalized in time for the 2001 growing season.
- ***Recommendation 3 (41):*** variety evaluation trials for low acreage and special crops be continued and enhanced.
- ***Recommendations 4 (42):*** financial support for research on low acreage and special crops
- ***Recommendations 5 (43):*** enhanced post harvest produce handling of low acreage and special crops

- ***Recommendation 6(44)*:** name change from Muck Crops Research and Services Committee to "Allium, Carrot and Leafy Vegetable Research and Services Committee".

Muck Crops

- The pea leafminer, reported as an emerging issue in 1999, is now a current issue.
- Concern about nutrient management planning is a increasing.
- The leek moth was first seen in Ontario in the 2000 growing season on *Allium* spp.

Minor Use Priorities

J. Chaput summarized the current, proposed and completed minor use submissions for onions, lettuce, carrots and celery. The committee reviewed new minor use needs and ranked them for each commodity, as shown below:

Onions	Carrots	Celery	Lettuce
Norton	BAS 516	Poast Ultra	Fulfill
Frontier	Folicur	BAS 500	Switch
Regent	**BAS 500**	BAS 516	BAS 516
Flint		Agrimek	USF 2001
Spinosad			Gavel
Folicure			
Aztec			
Fulfill			

Research & Services Priorities (see page 160 of OHCRSC annual report)

2. Disease Management for foliar and soil-borne diseases of all muck crops
3. Integrated crop management of muck vegetables including IPM development for all insect pests and nematodes.
4. Minor Use Pesticide Registrations.
5. Cultivar Evaluations.

Recommendations to OPMRSC

The number in the brackets refer to the number of the recommendation recorded in the OHRSC annual report (see pages 205-207)

- **recommendation #1.** Funding Research for Nutrient Management Planning
- **recommendation #2 (46).** In light of the effects of the US FQPA and the lack of **true 'harmonization' in availability of currently registered pesticide products** in both the US and Canada, the Canadian and US registration systems need to more rapidly become North American in standards for crop protection.
- **recommendation #3 (47).** Integration and cooperation between OMAFRA and the OF&VGA's AIMS organization is required in order to ensure that all growers of horticultural crops in Ontario, including muck crops, have access to complete crop scouting services. Services must include crop evaluation at harvest.
- **recommendation #4 (48).** It is strongly recommended that both the University of Guelph, Laboratory Services and Agriculture & Agri-Food Canada (London, St. Jean-sur-Richelieu) move to certify personnel, field station sites and laboratory facilities as GLP compliant in time for the 2001 growing season. ability of the industry.
- **recommendation #5 (49).** PCR diagnosis of aster yellows in leafhoppers should be made available to Ontario vegetable growers through the Pest Diagnostic Clinic, University of Guelph. The Pest Diagnostic Clinic is requested to inform this committee of the reasons for not offering this diagnostic service to Ontario growers.

Research Priorities for OMAFRA's "Special Research Program"
For Minor Use, Pesticide Reduction and Safe Usage and Emerging Pests, categories, see pages 162-164 of the OHCRSC annual 2000 report.

Nursery, Ornamentals and Turfgrass

Priorities and Emerging Isuses:
Note: The numbers in brackets represent the number of the recommendation in the OHCRSC report. For details of the recommendations made from the research priorities, please see pages 208 and 209 of the OHCRSC Annual 2000 report.

1.Pesti cides and integrated pest management (50)
2.I mproved understanding of plum pox virus (51)
3.Co-ordination of tech tra nsfer / information tools (53)

Protected Crops

- Investigate strategies to reduce efficiency of insects as vectors of plant diseases such as CMV by aphids, Beet Pseudo Yellows Virus by whiteflies etc.

- Identification of sites and form of dormant stages of bacterial and fungal pathogens in order to effect rational control between crops with disinfectants and modification of cultural practices.
- Efficacy testing of fungicides and disinfectants against such fungi as *Trichoderma harzianum, Verticillium fungicola, Mycogona perniciosa* and *Cladobotryum (Dactylium) dendroides.*

Greenhouse Vegetables Research Priorities – 2000

- Evaluate new and old pest (thrips, whiteflies, lygus bugs) and disease control measures (including application methods) and implement IPM strategies for control of powdery mildew in cucumbers, tomatoes and peppers, Pythium root rot and Penicillium in cucumbers, and Botrytis in all vegetables.
- Develop and evaluate energy use and environmental strategies that optimize plant growth, productivity, and fruit quality, as well as integrated pest management techniques in greenhouse vegetables.
- Maintain research on soilless culture with emphasis on recycling nutrient solutions and disease management to improve profitability and sustainability.
- Waste disposal project (Tom has the details)
- Evaluate new types of crops, cultivars, and post-harvest technology procedures (including packaging and labelling) to optimize yield and fruit quality.

Commercial mushrooms

Insect and Disease

1. Determine the effectiveness of fungicides, fungi static materials and barrier techniques to manage *Trichoderma* green mould on the casing and in the compost.
2. Provide the necessary information required by AAFC for registration of products already registered in the USA.
3. Develop biological control agents against mushroom diseases
4. Determine post-crop temperatures and post-harvest management procedures necessary to eradicate a *Trichoderma* green mould infection.
5. Determine factors that contribute to an airborne *Trichoderma* green mould infection.

Specialty mushrooms

Insects and diseases

1. Work with pesticide companies to expand pesticide labels to include specialty mushrooms

For details concerning Minor Use , please see pages 148-153 in the OHCRSC annual report 2000.

Potato

Pest Research Priorities

For more detail, see pages 171-172 in the OHCRSC Annual Report 2000.

1.Contro l of Soil Borne Diseases
2. Wireworm Control.
3.Evaluati on of New Varieties for the Ontario Market.
4.L ate Blight Management..
5. Monitoring Insecticide Resistance.
6. Chip Quality.
7. Greenhouse Minituber Production for Seed Potatoes
8. Food Safety: Water quality and Manure Applications.

Service Priorities

1.Reg istration of Quadris (Early Blight), Spinosad (CPB), Actara (CPB, Leafhoppers), and Fipronil (CPB, Wireworms) .

2.Maintain Tiss ue Culture Production for the Seed Potato Program at the SPUD Unit.

Summary of Priorities for the Pest Section of Special Research Program

1. MINOR USE REGISTRATION
- Quadris
- Spinosad
- Actara
- Fulfill
- Fipronil

2. PESTICIDE REDUCTION
- Control of Soilborne Diseases
- Wireworm Control
- Late Blight Management
- Insecticide Resistance Monitoring

3. EMERGING PESTS
- Pink Rot
- Powdery scab

EMERGING ISSUES

1. Nutrient Management Plans and Manure Management.
2 Water Management and Quality.
3 Food Safety

4. Consumer Acceptance of GM Potatoes. Biotechnology has provided growers with varieties that are resistant to pests. However, agitation against Genetically Modified Organisms (GMO's) has been intense enough to lead many international food companies to think it will be impossible to sell GM food in there. These companies have similar concerns about the prospects for sales in North America.

5. Potato Wart. In October 2000, some tubers infected with potato wart were found in a small section of a 62-acre field in PEI. Potato wart caused by the fungus Synchitrium endobioticum is a quarantinable disease, and Federal Quarantinable Regulations apply to fields where the disease is found. The US closed the border immediately to PEI potatoes after wart was detected. It is hoped that soon CFIA and APIS will reach an agreement that it is satisfactory to US and PEI potato growers.
The effect, both actual and potential, of the plum pox virus will be significant in the nursery/ landscape industry, as crops such as sand cherry are identified as potential carriers and subject to quarantine and destruction. There is a need for rapid improvement in our understanding of this disease, particularly the epidemiology and host range, so that control may be effective without inflicting severe economic impacts unnecessarily. Accurate surveys of the spread of the disease and understanding of the potential for genetically resistant *Prunus* types, as well as certification of resistant material, will be important in this regard.

Recommendation:
Target Agency: Pest Management Regulatory Agency and Agriculture and Agri-Food Canada, Policy Branch

TITLE: Lack of Harmonization of US and Canadian Registration Systems.

DETAILS: In light of the effects of the US FQPA and the current lack of true pesticide registration harmonization, the Canadian and the US registration systems need to more rapidly become North American in standards for crop protection.

BACKGROUND: Canadian growers including Ontario potato growers, face serious repercussions from the US FQPA and loss of many of the currently registered pesticides. When a new active ingredient is accepted by the US EPA and considered to be a new, reduced risk alternative to older pest control products, the product should be available to Ontario growers at the same time. US growers may lose many of their traditional pest control products, but many new alternatives are being evaluated and registered to replace old chemistry compounds. **Error! Bookmark not defined.** As a result of the lack of harmonization of the US and Canadian Registration system, Canadian growers face a major competitive disadvantage. The members of the Ontario Potato Sub-Committee request that this issue be seriously addressed and that concrete results be forthcoming concurrently with the US.

SWEET CORN

Recommendation 1

Issue: Limited funding for URMULE and URMUR

Source: Ontario Sweet Corn Research and Services Sub-committee
Target Agencies: Pest Management Regulatory Agency (Health Canada)
Agriculture and Agri-food Canada

Title: Limited funding for URMULE and URMUR

Details: Compared to our U.S. counterparts, funding for new URMULE and URMUR's is limited. This is perceived as a limitation to the number and the speed at which new products can move through the system and creates disadvantages to Ontario growers who do not have access to the same number of products

Recommendation: Increase the funding available to the minor use registration process in order to allow more pest control products to move through the system.

Recommendation 2

Issue: Coordination of efforts between PMRA, EPA and IR4

Source: Ontario Sweet Corn Research and Services Sub-committee

Target Agencies: Pest Management Regulatory Agency (Health Canada)
Agriculture and Agri-food Canada
OMAFRA

Title: Minor Use Registration Coordination

Details: Ontario growers continue to feel that they are at a disadvantage in terms of the availability of pesticides compared to U.S. producers. While there are still inequities, improvements are being made in coordinating the efforts of the PMRA and IR4 in order to make new pest control products available to Ontario growers. While this effort is recognized, there is a lot of work which needs to be done.

Recommendation: Encourage the PMRA and OMAFRA to continue to work with the EPA and IR4 in order to reduce the inconsistencies in availability of pesticides between Ontario and US producers.

Tender Fruit

TITLE: Review by PMRA, FQPA Impact and Identification of High Priority Pest Control Products and Potential Alternatives

DETAILS:
The current reviews impact particularly upon the organophosphate insecticides, but as any older pesticide product comes up for review, it must comply with the new regulatory procedures outlined in the FQPA. We need to review the FQPA document that was prepared in 1998 for PMRA and to update the document to identify key pest control products including insecticides, miticides and fungicides and evaluate the impact of potential loss of registration, alternatives and IPM fit. In particular it is anticipated that the next stage of the FQPA review will include fungicides (especially EBDCs, sterol inhibitors and Rovral). The review should also identify products available in the U.S. but not registered in Canada. The review should involve **representatives from OMAFRA, AAFC and the OTFPMB.**

BACKGROUND:
This is a revision and re-submission of the 1999 OHCRSC Recommendation 36 (TFRSSC 99-5) entitled "Organophosphate Review by PMRA, FQPA Impact and Identification of High Priority Pest Control Products and Potential Alternatives". The TFRSSC noted that the PMRA review is continuing, but the lack of feedback from PMRA is a major concern. There is no real organized process for input from the industry to PMRA. As it is anticipated that the next stage of the FQPA review will include fungicides (especially EBDCs, sterol inhibitors and Rovral), this recommendation is being resubmitted with an emphasis on the need to evaluate high impact fungicides and potential alternatives.

Tomatoes

Research Priorities (see page 175 in the OHCRSC Annual Report 2000 for more detail)

- Breeding and cultivar evaluation for processing tomatoes.
- Development of diagnostic tools and management strategies, for disease screening of seed and improved methods for detection of bacterial diseases in seed and plug plants is a high priority.
- Sustainability of high yield and quality by studying soil structure and rotational implications is required.
- Continue the development of pest management and resistance management strategies for insects (e.g. stink bug, Colorado potato beetle) and plant diseases.
- Work must continue on weed control, crop tolerance evaluations, herbicide evaluation and registration of new materials for both processing and fresh market tomatoes. The minor use program is very valuable in getting products registered.
- Studies into the implications and applications of genetic technology are required.

Service Priority

1. Continue the development and delivery of IPM programs including (but not limited to) disease prediction programs aimed at bacterial diseases and late blight.

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